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Nabil Fayoumi

04/15/2003 07:54 AM

To: **sdsmit, rswill1** cc: Sandra.Bron, Kevin_de_la_Bruere
Subject: **Review** of Apparent Effects Threshold and Toxic Units Approaches - **Sauget** Area 2

Steve and Rich,

Please find attached the comments from the **USEPA review** of Appendix B to Solutia's March 6 Response to Comments letter regarding the Remedial **Design** Work Plan and Prefinal Design for the proposed Groundwater Migration Control System for **the Sauget** Area 2 Site, groundwater operable unit. Attachment B to Solutia's March 6 letter **presents an** Apparent Effects Threshold (AET) and a Toxic Units (TU) approache for establishing performance **monitoring** action levels for sediment and surface water. Please submit your responses within 21 **days of receipt** of this e-mail. If there are any questions, please contact me at 312-886-6840.

Sincerely,

Nabil Fayoumi
Remedial Project Manager
Superfund Division

[redacted]
AET-TU-TECH-MEMO.do

Review of Proposed Approach for Establishing Performance Monitoring Action Levels for Sauget Area 2 Ecological Risk Assessment

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DATE: April 10, 2003

CH2MHILL has reviewed Appendix B to the Response to Comments on Remedial Design Work Plan provided by Solutia in their letter to USEPA dated March 6, 2003. Our comments are provided below along with some suggestions for improving the explanations of the Apparent Effects Threshold (AET) approach for setting performance monitoring action levels for contaminated sediments. The proposed Toxic Units (TU) approach for setting performance monitoring action levels for contaminated surface water is satisfactory.

General Comments:

1. It is believed that in general the AET approach description is accurate and appropriate. However, it is somewhat difficult to understand and some revision may be necessary to improve clarity.

2. There are no comments pertaining to the TU approach.

Specific Comments:

1. *Expand discussion of the AET Approach:* It is recommended that the background of the AET approach be better clarified and that references to the research used to establish this approach be cited.

2. *Clarify information pertaining to the determination of "effect" and "no effect" samples/data:* Since the basis for the AET approach is to determine which samples are associated with effects (i.e., impacts or toxicity) or no effects for representative test organisms it is important to highlight the methods used to establish these distinctions. Accordingly:

- Specify the toxicity testing protocol used to evaluate the sediment samples (i.e., cite protocol and specify the exposure duration and type of test)
- Highlight the steps used to determine "effect" or "no effect" samples, including:
  - Endpoints used to determine test species response
  - The statistical methods (e.g., T-test compared to control or reference response)
  - The statistical significance level (e.g., $\alpha = 0.05$)

3. *Revise or remove Table 1:* Table 1, as it stands, adds confusion to the text and over complicates the AET approach section. Since an AET is equal to the highest concentration in "no effect" (unimpacted) samples, ranking and consideration of effects data is irrelevant because impacts classification is binary (effect or no effect – see Specific comment #2).

- Once a "no effect" set of samples is determined, it must be simply stated that the AET concentration of a particular COPC is equal to the maximum concentration of that COPC in those samples
- If it is determined that a table is still warranted to aid the explanation, use of a hypothetical scenario similar to that shown below might suffice:

	Concentration (mg/kg)		
Sample	Chemical A	Chemical B	Impacted (toxicity)?
2	13		N
4	6	5	N
6		5	N
7	7	2	N
9	11	4	N
1	49	155	Y
3	15	45	Y
5	44	2	Y
8	29	6	Y
10	57	89	Y

highlighted concentrations equal the AET